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PORT DREDGING IN THE VENETIAN STATO DA MAR: THE CASE OF FAMAGUSTA (1489-1571)

Since Antiquity, dredging, i.e. digging out silt and other materials from the sea floor, has been an activity necessary for assuring the navigability of ports.[1] The Roman term for ballast, *saburra*, signifies both sand and ballast, and according to A.J. Parker, it was undoubtedly the job of the *saburrarii* at Ostia, the port that served Rome, to dredge silt from the port and load it on board ships as ballast. Evidence also exists of some sophisticated methods that were used in Roman times to deal with the problem of silting. Thus, underwater openings were left in the moles to allow the currents to pull out silt that accumulated inside the port.[2] In some cases, controlled currents were allowed to pass through the harbour continuously, a system that could be applied when the port had more than one entrance. In the port of Sidon (Saida), on the Lebanese coast, a flushing system was invented, whereby two holding tanks were carved from the natural reef and regularly filled by the high surf of the waves. Wooden sluice gates were pulled whenever the harbour needed dredging, pouring large quantities of water, which created a wash that pushed out the silt.[3]

1. For some preliminary observations on anti-silting technology in ancient times, see A. Raban, "The Siting and Development of Mediterranean Harbors in Antiquity", in M. Sears and D. Merriman (eds), *Oceanography: the Past*. Proceedings of the Third International Congress on the History of Oceanography held September 22-26, 1980 at the Woods Hole Oceanographic Institution, Woods Hole, Massachusetts and New York: Springer, 1980, pp. 753-757.

2. R. Gertwagen, "The Concept of Medieval Ports in the Medieval Eastern Mediterranean; Construction and Maintenance. The Case of Crete to the end of the 15th Century", *International Journal of Maritime History* 12(1) (2000), pp. 215-216.

3. D.J. Blackman, "Ancient Harbours in the Mediterranean, Part 2", *The International Journal of Nautical Archaeology and Underwater Exploration*, 11/3 (1982),

However, although silting could be reduced by various subterfuges, it could not be prevented altogether, and in many ports, there was no possibility or no ability to use sophisticated anti-silting methods.[4] Consequently periodical dredging became necessary from time to time to keep ports safe for the use of ships, all the more so during the Middle Ages, once the Roman techniques of mole building and port flushing seem to have been abandoned.[5]

Venice had a long experience in dredging activities. As a matter of fact, life in the Venetian lagoon depended on constant interventions, including dredging of canals for navigation in the shallow lagoon and in the city itself. This activity is documented from the eleventh century onwards.[6] A corporation of mud-removal boat owners (*burceri da cavafanghi*) existed in Venice as from 1503.[7] Special mechanical devices were invented to carry out this work, as exemplified by a patent for 25 years obtained in 1508 by a certain Zuan Marco di Canonico for two dredging machines (*due mac-*

pp. 199, 202; H. Keith Beebe, "Caesarea Marittima: Its Strategic and Political Significance to Rome", *Journal of Near Eastern Studies*, 42/3 (1983), p. 197; A.J. Parker, "Cargoes, Containers and Stowage: the Ancient Mediterranean", *The International Journal of Nautical Archaeology*, 21/2 (May 1992), pp. 90-91.

4. This was, for example the case of the port of Lechaion, on the western shore of the Isthmus of Corinth—see R. Rothaus, "Lechaion, Western Port of Corinth: A Preliminary Archaeology and History", *Oxford Journal of Archaeology*, 14 (5) (1995), pp. 295-296.

5. Gertwagen, "The Concept of Ports", *op. cit.*, pp. 215-216.

6. B. Cecchetti, *La vita dei veneziani nel 1300*, *Parte I: La città, la laguna*, Venezia: Fratelli Visentini, 1885, pp. 56-62; B. and L. Lanfranchi, "La laguna dal secolo VI al secolo XIV", in *Mostra storica della laguna veneta*, Venice: Centro Internazionale delle Arti e del Costume, 1970, pp. 79-80; G. Caniato, "L'organismo delicato: il governo idraulico e ambientale", in G. Caniato, E. Turri and M. Zanetti (eds), *La laguna di Venezia*, Verona: Cierre, 1995, p. 243. See also M.F. Tiepolo *et alii* (eds), *Laguna, lidi, fiumi. Cinque secoli di gestione delle acque. Mostra Documentaria, 10 giugno-2 ottobre 1983*, Venice: Archivio di Stato di Venezia, 1983.

7. Retrieved 22 November 2014 from:
http://www.veneziamuseo.it/TERRA/Santa_Croce/Crose/crose_sp_burceri.htm.

chine cavafango) of his invention.[8] The system of rivers and canals that provided communication between Venice and its mainland possessions, and through the latter with areas beyond the boundaries of the Venetian state, was also in need of repeated works of maintenance.[9] Different commissions were nominated to oversee public works in this field, and at the beginning of the sixteenth century, a permanent body, the *Savi alle Acque* (reinforced in 1531 by the *Esecutori alle acque*), and a corresponding *Collegio alle Acque*, were established for this purpose.[10]

Port towns constituted an infrastructure that held together Venice's overseas empire. Consequently maintaining these ports in an adequate condition was of considerable importance for the Republic. The application of Venetian technical expertise in this field in the so-called *Stato da Mar* is attested in 1333, with the dispatch to Crete of Francesco delle Barche, an experienced engineer who had invented a device to clear the seabed of the Venetian lagoon,[11] but it can be surmised that ports in Venice's overseas territories underwent maintenance operations in earlier periods as well. In any case, from the second half of the fourteenth century, the dredging of ports in Venice's *Stato da Mar* is often mentioned in the deliberations of the

8. Archivio di Stato di Venezia (hereafter: ASV), Senato Terra, reg. 16, ff. 32-33. Erin Black has kindly provided me with this reference.

9. Caniato, "L'organismo", *op. cit*., pp. 238-241.

10. Maria Francesca Tiepolo, "Archivio di stato di Venezia", in *Guida Generale degli Archivi di Stato Italiani*, Rome: Ministero dei Beni e delle Attività Culturali, 1994, p. 959.

11. R. Gertwagen, "L'isola di Creta e i suoi porti", in G. Ortalli (ed.), *Venezia e Creta*, Venice: Istituto Veneto di Scienze, Lettere ed Arti, 1998, p. 353. Gertwagen omits a later reference (1346) to the results of Francesco delle Barche's work in Candia, according to which, following his intervention, over 12 ships (*naves*) could dock comfortably and securely in that port. See Cecchetti, *La vita dei Veneziani*", *op. cit*., p. 58.

Venetian Senate, especially with regard to the main Cretan port of Candia and the port of Modon, in the southern Peloponnese.[12]

Although a systematic search for such evidence has not been carried out in the sources of the early modern period, we know that during the sixteenth century, the *Provveditori alle fortezze*, the magistracy responsible for fortifications, was occasionally requested to provide equipment and trained personnel for the dredging activities in Venetian overseas possessions,[13] and occasional evidence encountered in Venetian documents indicates that such activities continued in various parts of the *Stato da Mar*. Following are a few examples: on a basis of a detailed list of costs on equipment, manpower and transportation, the Venetian Collegio approved in March 1498 the proposal of Alvise Zucharin to dredge the port of Modon to a depth of 13 *pie* (4.51m.), a project that among other things involved the employment of ten experienced workers, a special mechanical device (*edificio*) and five boats (*burchiele*). The cost of this work, which would be covered by the Salt Office, was estimated at 375 ducats;[14] in 1505, the Se-

12. Regarding Cretan ports, Gertwagen mentions deliberations that took place in the years 1350, 1356, 1357, 1370, 1371, 1372, 1373, 1376, 1383, 1395, 1414, 1425, 1460, 1461, 1462, 1463, 1463, 1467, 1473, 1502 —see her "L'isola di Creta", *op. cit*., pp. 358-363; *idem*, "The Concept of Medieval Ports", *op. cit*., pp. 177-241. For Modon, see *idem*, "Venetian Modon and its Port, 1358-1500, in A. Cowan (ed.), *Mediterranean Urban Culture 1400-1700*, Exeter: The University of Exeter Press, 2000, p. 136. For a discussion of Gertwagen's claims that such dredging activities were on the whole ineffective, since big merchant ships were unable to enter the harbour, see below.

13. John Hale, "The First Fifty Years of a Venetian Magistracy: The *Provveditori alle Fortezze*", in A. Molho and J.A. Tedeschi (eds), *Renaissance Studies in Honor of Hans Baron*, Dekalb, Illinois: Northern Illinois University Press, 1971, p. 519 (with references to La Canea, Zara and Candia).

14. ASV, Provveditori al Sal, busta 8, reg. 7bis, ff. 184v-185. Renard Gluzman has kindly turned my attention to this document. The dredging seems to have been carried out successfully that year, as reported in M. Sanuto, *I diarii*, II, ed. G. Berchet, Venice, 1879, cols 252, 353. One Venetian *piede*, or *pie*, is equivalent to 0.3477 m., *Martini, Manuale di metrologia* etc., etc., Turin: Loescher, 1883, p. 817.

nate received a report referring to the dredging of the port of Candia;[15] in July 1525, the outgoing *Capitanio* of Candia, Thoma' Mocenigo, reported that the entrance to Candia's port had been dredged to a depth of 14 *pie*' (4.86 m.), enabling merchantmen of up to 700 *botte* to enter that port, and that similar works continued inside the same harbour;[16] in 1529 the Venetian Senate approved the demand presented by the representatives of the Apulian port town of Trani that its harbour be dredged;[17] in 1533, the former Commander General of the Venetian fleet praised a certain Stamati Gavreli of La Canea, who had dredged the same port, and in 1535, the Senate expressed its satisfaction with the repairs of a mole and with dredging activities carried out in the same town; in 1570, Piero Navagero, the outgoing *capetanio* of Candia, recommended using in the port of La Canea a dredging mechanism (*edificio da cavar fango*) similar to the one used in the port of Candia;[18] In 1576, the governor of Corfu, Fabio da Canal, mentioned in his final report the necessity to dredge (*cavar*) the port of *Mandrachio*, adjacent to Corfu's old fortress, adding that the most efficient way to carry out this project would be to employ "one of those canal dredgers who are experienced in this profession" (*uno di questi cavacanali che sono pratichi di questo mestiere*);[19] one of his successors, Ferigo Nani, referring

15. M. Sanuto, *I diarii*, vol. VI, ed. G. Berchet, Venice: R. Deputazione Veneta di Storia Patria, 1881, col. 195.

16. ASV, *Collegio, Relazioni finali di ambasciatori e pubblici rappresentanti*, b. 61, c. 30.

17. V. Vitale, "L'impresa di Puglia degli anni 1528-1529", *Nuovo Archivio Veneto*, XIII/2 (1907), p. 27.

18. M. Sanuto, *I diarii*, vol. 57, ed. R. Fulin *et alii*, Venice: Federico Visentini, 1902, col. 497 (1533); ASV, Senato Mar, reg. 23, ff. 125r-125v (1535); ASV, Collegio, Relazioni, busta 81, *relazione* Piero Navagero, 1570).

19. G. Pagratis, *Οι εκθέσεις των βενετών βαϊλών και προνοητών της Κέρκυρας*,

in his report of 1582 to the same activity, mentions "a device developed for this purpose" that proved to be very appropriate (*l'ingegno trovato... a questo effetto... che è molto aproposito per tal escavatione*);[20] the port of Spalato (Split) in Dalmatia was being dredged during the first years of the seventeenth century.[21]

When Venice took hold of Cyprus in late December 1473 (at least *de facto*), it already had a rich experience in dealing with such problems, both in the Venetian lagoon as well as in the Republic's overseas territories. Cyprus constituted a crucial factor in Venice's system of maritime trade. Famagusta was the only port town worthy of this name in Cyprus during the Venetian period, and, as we shall see presently, was indeed subject to regular dredging operations that will be discussed below.

Before going into the heart of the matter, it would be useful to describe the layout of the port of Famagusta, as reflected in contemporary sources.[22] Thanks to the famous and tragic episode of the long Ottoman siege and the subsequent conquest of the town, we have plenty of maps and illustrations showing the layout of Famagusta's harbour.[23] Not all of them faithfully

Athens: National Hellenic Research Foundation, Institute of Byzantine Research, 2008, p. 170. Two years later, another governor of Corfu, Zuan Malipiero, noted in his report that when the dredging of the port would be completed, it would be able to accommodate 18 (a correction in the margin gives 23) galleys, *ibid*., p. 184.

20. *Ibid*., p. 217. On the same activity, see also *ibid*., p. 248 (1583), 314 (1588: Teodoro Balbi notifies that the *Mandrachio è ridotto in poco fondo*).

21. R. Paci, *La "Scala" di Spalato e il commercio veneziano nei Balcani fra Cinque e Seicento*, Venice: Deputazione di storia patria per le Venezie, 1971, p. 62, n. 68.

22. For Famagusta's port during the medieval period, see M. Balard, "Il sistema portuale genovese d'Oltremare", *Atti della Società Ligure di Storia Patria*, NS 28(1) (1988), p. 339; C. Otten-Froux, «Les ports de Chypre (XIIIe-XVe siècles) », in G. Fabre, D. Le Blévec and D. Menjot (eds), *Les ports et la navigation en Méditerranée au Moyen Age*, Paris: Le Manuscrit, 2009, pp. 180-182; *idem*, «La ville et la mer: l'exemple de Famagouste », in E. Malamut and M. Ouerfelli (eds), *Villes Méditerranéennes au Moyen Age*, Aix-en-Provence: Presses universitaire de Provence, 2014, pp. 188-190.

23. E.g. A. and J. Stylianou, *The History of the Cartography of Cyprus*, Nicosia: The Cyprus Research Centre, 1980, figures 26, 37, 38, 50, 52, 55, 61, 62, 65, 76, 88,

represent the actual layout of the harbour, but some basic elements, a few of which can still be seen in the same harbour today, figure repeatedly in early-modern graphic representations and can also be confronted with a number of textual descriptions.

Basically, the port of Famagusta was (and to a certain extent still is) a natural harbour divided into two sections, both of which protected from the sea by the same line of natural rocks and shoals. The inner section, (sometimes referred to as the *porto di cadena* —"the Port of the Chain"), a great part of which was practically unusable, had a circumference of about 12 Venetian miles (c. 20 km.), and was protected by a curved line of rocky reefs and islets known in the Venetian period as the *scogli*.[24] These were connected to the land at some distance from the south-eastern corner of the town's fortification and, at a point approximately opposite the town's citadel, to an artificial mole (*purpurela,* or *porporella*) that stretched towards the town. At the western edge of this mole was the entrance into the inner port. As can be seen in the rough, but useful, sketch prepared in the 1550s by Leonardo Donà (see Fig. IV in the Appendix), the Venetian governor's son, as well as in the colourful and detailed drawing, prepared between 1555 and 1561 by the military engineer Paolo di Ferrari (see Fig. I),[25] the chain that closed the entrance to the

95 , 112, 117, 120, 133, 136, 140, 141, 143, 157; L. Navari (ed.), *Maps of Cyprus from the Collection of the Bank of Cyprus Cultural Foundation*, Nicosia: Bank of Cyprus Cultural Foundation, 2003, figures 43, 56, 97, 100.

24. The port's circumference is reported in 1531 by the Chief Governor of Cyprus, Francesco Bragadin, ASV, Collegio, Relazioni, busta 61-I, *relazione* Francesco Bragadin, f. 123. For the names of the islands constituting the reefs, see Leontios Makhairas, *Recital concerning the Sweet Land of Cyprus*, ed. and trans. R.M. Dawkins, vol. II, Note 1 to No. 362, and Attar's map in F. Cavazzana Romanelli and G. Grivaud, *Cyprus 1542: the Great Map of the Island by Leonida Attar*, Nicosia: The Bank of Cyprus Cultural Foundation, 2006, p. 90 (detail).

25. F. Frigerio, «Un plan manuscrit inédit du XVIe siècle du port de Famagouste», *Πρακτικά του Δεύτερου Διεθνούς Κυπριολογικού Συνεδρίου (Λευκωσία, 20-25 Απριλίου 1982)*, vol. 2, Nicosia, 1986 plate No. 1. Frigerio proposed dating the plan to between 1562 and 1570 (*ibid*., pp. 300-301). Yet in his report, presented in 1561, Domenico Trevisan mentions having requested *Paulo de Ferari Milanese*, who had arrived in Cyprus together with the late Count Ercole [presumably Ercole Martinengo], the *governator*, to prepare plans of the three mountain fortresses in view of their restoration. Trevisan also recommended continuing the employment of Paolo di Ferrari in Cyprus as an en-

inner port was attached on one side to the western extremity of this mole, and on the opposite side to a jetty projecting from the citadel that seems to have been built by the Venetians in the early sixteenth century.[26] Camille Enlart already attributes the construction of this jetty to the Venetians, noting that when doing it, they transformed the north-eastern tower, or dungeon, of the citadel into a sort of sea bastion (*sorte de bastion contruit dans la mer*).[27] More recent studies, which have confirmed the Venetian origin of the jetty, as well as the large and round tower of the citadel (Enlart's "sea bastion") to which it is linked, dismissed the supposition that the big round tower was built in place of a former Lusignan dungeon.[28]

gineer. It is plausible that the plan of Famagusta's fortifications and harbour that bears Di Ferrari's name was also prepared at Trevisan's request, and consequently its *terminus ad quem* could be 1561. The *terminus a quo* cannot be earlier than November 1555, the month in which Ercole Martinengo was on his way to Cyprus. For the reference to Di Ferrari in Trevisan's report, see ASV, Collegio, Relazioni, busta 84, *relazione* D. Trevisan, f. 2v; for Martinengo's letter from Zante (heading for Cyprus), dated 1 November 1555, see ASV, Senato Mar, filza 15. Besides, there seems to be a confusion in modern historiography between the aforementioned Count Ercole, who died in Cyprus in December 1560, and another Martinengo, later involved in the defence of Famagusta against the Ottomans attack in 1570-71. For the announcement of Ercole's death, see ASV, Senato, Dispacci, Cipro, filza 2, 31 December 1560 and 5 January 1561 (n.s.). The date of Count Ercole's death has also been subject to erroneous speculations. See, for example, Marco Barbaro, Genealogie, vol. 21, f. 13 (attributing his death to 1556); O. Rossi, *Elogi historici de Bresciani illustri*, Brescia: Bartolomeo Fontana, 1620, p. 331 (erroneously dating Ercole's death in Famagusta to 1550); P. Guerrini, *Una celebre famiglia lombarda. I Martinengo*, Brescia: Fratelli Geroldi, 1930, pp. 244-245 (referring to Rossi's dating). See also L. Beretta, G. Todeschini and P.M. Bagnadore, "Architettura del secondo Cinquecento", in *Storia di Brescia*, II, Rome: Istituto della Enciclopedia Italiana, 1961, p. 886, n. 1 (noting the possible confusion between different protagonists of this family).

26. Christian Corvisier, « Le château de Famagouste », in J.-B. De Vaivre and P. Plagnieux (eds), *L'art gothique en Chypre*, Paris : Diffusion De Boccard, 206, p. 352, figure 2b. In December 1557, the Senate allotted a sum of 313 ducats for the acquisition of a new chain for the port of Famagusta, ASV, Senato Mar, reg.33 f. 194.

27. C. Enlart, *L'art gothique et la Renaissance en Chypre*, Paris : Ernest Leroux, 1899, II, p. 620.

28. G. Jeffery, *A Description of the Historic Monuments of Cyprus. Studies in the Archaeology and Architecture of the Island*, Nicosia: The Government Printing Office, 1918, p. 104; Corvisier, « Le château de Famagouste », *op. cit*., pp. 351-354.

Fig. I: Paolo di Ferrari, *Famagosta completa et la pianta del baloardo* (plan of the Famagusta's fortifications and port, presumably between 1555 and 1561)[29]

29. Biblioteca Nazionale Marciana [hereafter: BNM], Ms It VI 189 (10031), No 21. By courtesy of the Biblioteca Nazionale Marciana.

Anyhow, the jetty is depicted in many plans, models and *vedute* of Famagusta, such as the wooden model of Famagusta (wrongly bearing the caption 'Maina in Morea') kept in the Museo Storico Navale in Venice,[30] the famous *veduta* of Gibellino depicting Famagusta under Ottoman siege (Figure II),[31] as well as later iconographic depictions of the city and its port.[32] This is also how this part of the inner port is described (apparently not on the basis of personal acquaintance) by Paolo Paruta (1540-1598), who noted in his book on the War of Cyprus that the chain was attached to a jetty (*sperone*) that projected from the citadel [eastward] at a length of some 40 *passa* (c. 70 m.) and [ended with] a small fort built in the old style (*fabbricato all'antica*), with four towers to assure control over the entire port (*tutto il*

30. Cavazzana Romanelli and Grivaud, *Cyprus 1542*, *op. cit*., p. 104, fig. 39a. The second wooden model (Fig 39b in Cavazzana Romanelli and Grivaud, *Cyprus 1542*, *op. cit*., p. 104) kept in the same museum seems to represent a project that was not realized. It shows a small castle at the extremity of the mole, instead of the jetty.

31. C. Otten-Froux, « La ville de Famagouste », in De Vaivre and Planieux, *L'art gothique*, *op. cit*., pp. 112-113.

32. Stylianou, *The History of the Cartography of Cyprus*, *op. cit*., figures 50 (c. 1571), 52 (1575), 55 (1573), 61-61a (undated), 65a (1751); Navari, *Maps of Cyprus*, *op. cit*., No. 43. The latter depiction, included in the travelogue by Franco Rosaccio (published in 1610), is said to have been first published in the 1590s, before 1597. See also the schematic plan of Famagusta, included in a travel account by Louis De Hayes, published in 1624, also showing the jetty and a small castle on the opposite mole, Navari, *Maps of Cyprus*, *op. cit*., No 63. The same goes for the view of Famagusta by O. Dapper, dated 1688, *ibid*., No. 97, as well as for later depictions (*ibid*., No. 100, 100.1). These iconographic testimonies probably convinced Enlart to note (without reference to his sources) that the small "tower of the chain" was located beyond the entry to the inner port (*de l'autre coté du goulet*), see Enlart, *L'art gothique*, *op. cit*., II, p. 620.

porto assicura).[33] The map of Cyprus prepared by of Leonida Attar in 1542 likewise shows a jetty protruding eastward and ending with a fort, although the location of the jetty's connection with the town appears to be erroneous.[34] As a matter of fact, the same jetty has survived to our times (according to Jeffery: "partially rebuilt"),[35] as can be seen in a map representing Famagusta in 1905, and in more recent photographs.[36]

Nicolo di Martoni, the late fourteenth-century traveller, who visited Famagusta in 1394, described a wooden bridge or jetty which projected at a stone's throw off the city gate (which must be the Sea Gate) into the port; he explained that ships that entered the port moored along this bridge to

33. P. Paruta, *Storia della guerra di Cipro, Libri Tre*, Siena: Tipografia di Pandolfo Rossi, 1827, p. 236. This work was first published posthumously in 1599. For the Venetian *passa*, see note 47.

34. Cavazzana Romanelli and Grivaud, *Cyprus 1542*, *op. cit*., p. 90. The connection of the jetty (*speron*) with the citadel's tower is also documented in a detailed list of all the towers along Famagusta's fortification prepared by an anonymous author before 1557. See N. Patapiou, "□ι οχυρώσεις της Αμμοχώστου επί βενετοκρατίας", *Επετηρίδα του Κέντρου Επιστημονικών Ερευνών*, XXV (1999), pp. 110, 124.

35. Jeffery, *A Description*, *op. cit*., p. 116.

36. Navari, *Maps of Cyprus*, *op. cit*., No. 167; N. Faucherre, "L'enceinte urbaine de Famagouste" in De Vaivre and Plagnieux, *L'art gothique en Chypre*, *op. cit*., pp. 308, 315, 343.

Fig. II: Stefano Gibellino: Famagusta under Ottoman siege, 1571 (detail)[37]

37. Bibliothèque nationale de France, Réserve J 3093. By courtesy of the BnF.

load goods.[38] However, figurative depictions from the Venetian period onwards show a quay sustained by a solid stone structure, stretching from the Sea Gate up to the aforementioned jetty, as well as another short pier projecting from that same quay parallel to the above-mentioned jetty.[39] The possible date of construction of the quay and pier remain to be investigated. It may have been built roughly around the time in which the Sea Gate was constructed, i.e. between 1489 and 1496 or somewhat later.[40] It is even possible that the silt that was dredged from the port, as will be demonstrated presently, was used as a fill for that purpose. Pierre Mésenge, a French pilgrim who visited the town in 1507 on his voyage of return from the Holy Land, noted that the port had been in a ruinous state for a long time, which prevented ships from using it, observing, however, at the same time that the Venetians were conducting repairs there.[41] His observation may refer to the construction of the wharf that has been in use until today.

A document published by Nicolas Iorga and also referred-to by Enlart, mentions that in 1443-44, during their war with the Catalans, the Genoese rulers of Famagusta scuttled a *griparia* in the "St. Catherine opening" (*ad*

38. L. Legrand (ed.), « Relation du pèlerinage à Jérusalem de Nicolas de Martoni, notaire italien (1394-1395) », *Revue de l'Orient Latin*, III (1895), p. 628 (*ante portam civitatis est de lingo quidam pons longus per jactum lapidis, prope quem pontem veniunt navilia, et per ipsum pontem mercantia portantum ad navilia*).

39. Martoni's testimony is cited by Enlart, who also refers to "a nice wharf that extends from the citadel to the Sea Gate", without reference to the period of its construction, noting (without reference to his sources) that it was only accessible by small vessels. See Enlart, *L'art gothique*, II, *op. cit*., pp. 620-621. For depictions of the paved quay, see, for example, A. and J. Stylianou, *A History of the Cartography of Cyprus*, *op. cit*., figures 37 (Model of Famagusta in the Museo Storico Navale, Venice), 62-62a (Gibellino's view of Famagusta, 1571), also depicted here, in Figure II; Navari, *Maps of Cyprus*, *op. cit*., No. 43 (Francesco Rosaccio, 1610). The quay, or *Mollo*, and the short pier also figure in Paolo di Ferrari's drawing.

40. On the Sea Gate, see N. Faucherre, "L'enceinte urbaine de Famagouste", in De Vaivre and Plagnieux, *L'art gothique en Chypre*, *op. cit*., pp. 317-318.

41. Pierre Mésenge, *Le Saint voyage pour visiter le Saint Sépulcre*, Bryn Mawr College Library, Bryn Mawr, Penn., Ms. 13, f. 61.

bucham Sancte Catarine), which is described by Camille Enlart as an opening in the reef that protected the port. He also notes (without adding any reference) that later on, the Venetians closed this opening by a breakwater (*les Vénitiens firent une digue*).[42] We only have some general statements that may indicate that this was really the case. Piero Sanuto, a Venetian magistrate active in Cyprus at the turn of the sixteenth century, mentioned in September 1500 what he describes as "the fortification of the Oxen's reef" (*il Scoio del Bo*) among the works that had to be carried out in Famagusta's port.[43] Nicolo Dolphin, *Capetanio* of Famagusta, referred in January 1528 to the works on the *scoglio del Bo* as something that had already been completed.[44] The closure of the opening between the reefs must have therefore been carried out sometime between these two dates. It may have even been the cause of increased silting, by preventing water currents to flow in and out the inner port, carrying at least part of the silt back into the open sea.

The outer port (*il porto dentro le secche*), located north of the Port of the Chain, was protected from the sea on its eastern side by a line of banks (and presumably also reefs), to which the contemporary sources refer as *Le Secche* (the Banks).[45] These can be seen in Leonardo Donà's sketch (Figure IV), in Paolo di Ferrari's drawing of the fortifications and harbour (Figure I), and rather schematically in Leonida Attar's map as well as in printed depictions of Famagusta published after its conquest by the Ottomans.[46] The

42. N. Iorga, "Notes et extraits pour servir à l'histoire des croisades au XVe siècle", *Revue de l'Orient Latin*, IV (1896), p. 112; Enlart, *L'art gothique*, *op. cit*., II, p. 613. Dawkins has already noted that in Gibellino's *veduta*, the two islands appear to be connected by a wall. See L. Makhairas, *Recital*, *op. cit*., vol. II, note No. 362.

43. Sanuto, *I diarii*, III, col. 839.

44. ASV, Collegio, Relazioni, busta 61-1, *relazione* Nicolo Dolfin, f. 59.

45. For the expression *il porto dentro le secche* denoting the outer port, see Leonardo Donà's description in the Appendix, as well as Pietro Valderio, *La Guerra di Cipro*, ed. by G. Grivaud and N. Patapiou, Nicosia: Cyprus Research Centre, 1996, p. 66.

46. For Donà's sketch, see the Appendix. For the other depictions, see Cavazzana Romanelli and Grivaud, *Cyprus 1542*, *op. cit*., p. 90; Navari, *Maps of Cyprus*, *op. cit*., Nos. 43, 63, 100.

main entrance to the outer port, through which big merchant vessels could enter, was from the north, but according to Leonardo Donà, there were also two openings along the *Secche* through which smaller vessels could enter this section of Famagusta's port, both of them also depicted by Donà in his sketch (Fig. IV): one closer to the *Scogli* of the Port of the Chain, through which only small boats and minor vessels (*barche e piccioli navilii*) could pass, and the second, located opposite the *Torrion del Diamante* (i.e. opposite the north-eastern edge of Famagusta's walls), through which light and big galleys (*gallere sottili e grosse*) could pass, since the water depth there was 4 *passa* (6.95 m.). Paolo di Ferrari's drawing (Fig. I), which undoubtedly represents the harbour in greater detail and accuracy, also shows these openings along the *Secche*, and even adds a third one, roughly midway between the two described by Donà. Donà noted, however, that entrance through all openings was rather difficult and dangerous, but inside the outer port the depth of the water, ranging between 5 and 6 *passa* (8.69-10.43 m.), was largely sufficient for big merchantmen.[47]

Finally, Paolo di Ferrari's drawing also shows a line of rocks in the outer harbour at a small distance from the town's fortifications and parallel to them. In Leonardo Donà's description of the port, we have an explanation of this element: a sort of *porporella*, or mole, built by the Venetians a palm below the water surface in this part of the open port, to prevent any attacking forces to be able to reach the walls from the sea (see the text and translation in the Appendix).

47. Biblioteca del Civico Museo Correr, Venezia (hereafter: BCMC), Ms Donà dalle Rose 45, ff. 161r-161v (1557-58) and infra, in the Appendix. Both Donà and the traveller Christoph Fürer von Haimendorff, who passed through Famagusta in 1566, describe the navigation instructions for entering into the outer port, by help of a tower, the *Torre dell'Occa*, located on land to the north of the town's fortifications. See *ibid*., f. 161, and C. Fürer von Haimendorff, *Reis-Beschreibung in das Gelobte Land*, Nuremberg: Endter, 1646, p. 299. This tower is also depicted in Gibellino's *veduta*, as can be seen in Figure II. The openings in the *secche* are also mentioned in the report of Domenico Trevisan, the governor of Famagusta, where he observed that sand penetrated into the harbour through them, ASV, Collegio Relazioni, busta 84, *relazione* Domenico Trevisan, f. 12 (1561). One Venetian *passo* (=5 *piedi*) was equivalent to 1.7385 metres, *A. Martini, Manuale di metrologia*, p. 817.

What were the uses of the port of Famagusta during the period of Venetian domination? Somewhat paradoxically, during that period, despite being the biggest and best protected harbour on the island, Famagusta was not the main Cypriot port of call for Venetian commercial shipping in the eastern Mediterranean. Most Venetian ships anchored off shore near the salt pans of St. Lazarus on the southern shores of Cyprus. Larnaca at that period was still a small village at some distance from the coast, and near the Salt Lake of St. Lazarus there were hardly a few buildings. Nevertheless, Le Saline ("The Salt Pans"), as the anchorage was called by the Venetians, had several important advantages: it lay by the main maritime route connecting the Levant with Italy and the western Mediterranean, which passed along the southern shores of Cyprus; it was free of underwater obstacles and well protected from the dangerous northerlies to which the port of Famagusta was (and is) exposed; it offered salt, which was in great demand in Venice, could also be used as ballast, and constituted a central element of a Venetian system of loans for shipbuilding that could be reimbursed through transportation of Cypriot salt; and it was located at a relatively short distance from Nicosia, the main seat of Venice's administration on the island.[48] Compared to the anchorage off Le Saline, Famagusta was less advantageous in several respects. The harbour's main opening was, as it still is, toward north, which exposed it to violent northerlies. The entry into the port through this opening, as already noted, was dangerous because of the

48. B. Arbel, "Traffici marittimi e sviluppo urbano a Cipro (secoli XIII-XVI)", in E. Poleggi (ed.), *Città portuali del Mediterraneo*, Genua: SAGEP, 1989, pp. 89-94; *idem*, "Maritime Trade in Famagusta during the Venetian Period (1474-1571), in M.J.K. Walsh, T. Kiss, N.S.H. Coureas (eds), *The Harbour of this Sea and Realm. Crusader to Venetian Famagusta,* Budapest, CEU Press, 2014, pp. 91-97. For the qualities of Le Saline's anchorage, see also the observations of the military engineer, Ascanio Savorgnan, in his report of 1562: A. Savorgnan, "Copiosa descrizione delle cose di Cipro, con le ragioni in favor, o contra diverse opinioni, e delle provisioni necessarie per quel Regno", etc. in J.P. Reinhard, *Volschtändige Geschichte des Königreichs Cypern,* 2 vols, Erlangen-Leipzig: Wolfgang Walter, 1766-68, vol. II, *Beylagen*, p. 39 (*ha sorzador eccellentissimo e maggior concorso di navi che alcun altro loco dell'isola, e vi è terreno senza rocca*).

shoals.[49] And, as will be explained shortly, the inner harbour had to be dredged continuously in order to enable its use. Whenever, for whatever reason, dredging was neglected, entering the inner port became impossible even for medium-sized merchant vessels. On the other hand— the port of Famagusta had one important advantage: security. It was a well-protected port, enclosed within a natural reef, and, as we have seen, its inner part, where a small squadron of military galleys was stationed, could be closed by a heavy chain.[50] The fortified town, including a citadel with hundreds of armed soldiers, also offered protection. The eastern Mediterranean was an area teeming with pirates, corsairs and other hostile elements,[51] and when tension around the island was growing, the possibility of finding a safe haven in Famagusta was an important advantage. For example, during the war with the Ottomans around the turn of the sixteenth century, the commercial galleys of the Beirut line were allowed to sail to Famagusta for their safety (*per segurtà*) in the middle of the loading operations at Beirut, and then return to Beirut to complete the loading under safer conditions.[52]

Venice's commercial galleys, manned by around 200 seamen, were generally considered to be very secure ships, but they could be vulnerable when anchoring in open, unprotected, spaces for an extended period. Famagusta, as well as other Venetian ports en route, could therefore be of great help in offering protection to these valuable ships and their cargoes. During the Venetian domination of Cyprus, the island was an important way station for the so-called Beirut galleys, which sailed between Venice with Beirut and

49. In addition to Leonardo Donà's above-mentioned note in this regard, see the description by Christoph Fürer von Haimendorff, who visited the port in the spring of 1566: Fürer von Haimendorff, *Reisebeschreibung*, p. 299 (*Es its übel oder [aber?] gefährlich in denselben Hafen zu kommen, dann es aussen viel Felsen hat*…).

50. For references to chains, see, for example, Sanuto, *I diarii*, LI, Venice, 1898, col. 442, 445 (chains in the ports of Famagusta and Cerines, *relazione* Silvestro Minio, 1529); ASV, Collegio, Relazioni, busta 61-I, *relazione* Francesco Bragadin, 1531, f. 123v.

51. A.Tenenti, "I corsari in Mediterraneo all'inizio del Cinquecento", *Rivista storica italiana* 72 (1960), pp. 234-287; E. Skoufari, *Cipro veneziana (1473-1571)*, Rome: Viella, 2011, pp. 175-177.

52. Sanuto, I *diarii*, III, ed. R. Fulin, Venice, 1880, col. 970 (October 1500).

other ports on the Syrian and Palestinian coasts.[53] During the Venetian rule of Cyprus the Beirut galleys were sent from Venice to Syria 74 times, and they were normally required to anchor in the port of Famagusta on their way eastward. This requirement seems quite reasonable, considering the high value of specie and goods carried on board these vessels.[54] In the well-protected port of Famagusta these ships could find shelter and provisions for its numerous crew members and passengers.[55]

However, on their way back to Venice, anchoring in Cyprus was not always obligatory. Thus in 1479 and in 1480 the commander of the galleys was at liberty to decide whether to visit Cyprus or not.[56] Moreover, at a certain moment, not later than 1546 (when the ports to be visited are regularly mentioned in the *Incanti*), the obligatory maritime station in Cyprus on the return voyage was Le Saline, rather than Famagusta.[57]

What could have been the reason for such a change? Arguably, the answer to this question should be sought in the different circumstances that characterized the sailing eastward and the return voyage to Venice. On their way eastward, Famagusta constituted an ideal last stop before proceeding to Beirut, or, as from 1546— to Tripoli. Many inhabitants of Famagusta were of Syrian background, and could therefore serve as intermediaries for contacts with and information on the nearby Syrian provinces of the Ottoman Empire. The crossing to Beirut and the return to Famagusta could be carried out within 48 hours, providing up-to-date news on conditions in

53. On the operation of Venice's merchant galleys during this period, see C. Judde de Larivière, *Naviguer, commercer, gouverner. Economie maritime et pouvoirs à Venise (XVe-XVIe siècles)*, Leiden: Brill, 2008. For a table of galley voyages, see *ibid*., pp. 66-67.

54. B. Arbel, "The Last Decades of Venice's Trade with the Mamluks: Importations into Egypt and Syria", *Mamluk Studies Review*, VIII-2 (2004), pp. 73-79, 86.

55. For the number of crew members and passengers on board the merchant galleys, see F.C. Lane, *Navires et constructeurs à Venise pendant la Renaissance*, Paris: SEVPEN, 1964, p. 20, note 3.

56. ASV, Senato Mar, Incanti di galee, reg. I, ff. 64, 69v-70v.

57. Arbel, "Maritime Trade", *op. cit*., p. 98.

Syria.[58] Only when the commander of the commercial galley fleet was assured that there were no high risks involved, the galleys proceeded to their final destination. Yet occasionally, when sailing to Syria was considered too risky, the stay in Cyprus was prolonged.[59] Under such circumstances Famagusta, with its protected port and the services that could be obtained in town was obviously the best place to be used as a temporary haven.

On the galleys' return westward circumstances changed considerably. The utmost interest of the entrepreneurs involved in the operation of the galleys was to reach Venice as quickly as possible, in order to gain a quick return for their investment in the expensive goods acquired in the Levant. The stop-over in Cyprus was connected to assignments that could be carried out within a short time before proceeding to Venice: getting in touch with the *regimento* (the Venetian colonial administration) in Nicosia, collecting letters and occasionally also money, sent on board the well-protected galleys to the metropolis, and occasionally embarking important passengers. For these scopes, the excellent anchorage at Le Saline, located relatively close to the island's capital, was, in fact, better suited than Famagusta, and the big crew and canons on board were apparently considered a sufficient deterrent against piratical attacks during a short stay lasting no more than 2-3 days. It is also possible that when heavily loaded on their return voyage to Venice, the commercial galleys could encounter some difficulty in entering the inner harbour of Famagusta. In such a case, anchoring in the outer (open) harbour would have been possible, but hardly had any advantage compared to Le Saline.

Maritime and commercial activity in the port of Famagusta could have also been influenced by a change in the organization of maritime trade between Venice and Syria that gradually developed from the 1530s onwards.

58. E.g. Elia da Pesaro, "A Hebrew Letter from Famagusta, 1563" [temporary title], Bibliothèque nationale de France, Ms. Héb. 276, ff. 118v-119. I am preparing a new edition of this text. All the existing ones are defective.

59. E.g. B. Arbel (ed. and trans.), *Venetian Letters (1354-1512) form the Archives of the Bank of Cyprus Cultural Foundation and Other Cypriot Collections*, Nicosia: The Bank of Cyprus Cultural Foundation, 2007, pp. 35, 94-97 (1480).

This change did not concern the galleys of the Beirut line, but rather the private merchantmen. During the last decades of Venetian rule in Cyprus, Venetian merchantmen carrying goods and specie shipped to Syria increasingly used Cyprus as the final destination of their crossing eastward. The residual track of such shipments was left to local Cypriot crafts. This arrangement saved the Venetians the harassments and troubles they had often encountered in Muslim ports,[60] and also the payment of port dues in the Ottoman harbours. Under these circumstances the regional trade between the island and the nearby Syrian coasts intensified, and the role of Famagusta as a commercial emporium was also enhanced, since Famagusta's inhabitants of Syrian background played a central role in assuring the flow of merchandise, specie and news between Syria and Cyprus. During years in which no galleys were sent to Syria, this role of Famagusta as a commercial emporium increased even further. In 1563, the town's governor reported that the storehouses of Famagusta regularly contained wares that were valued between 100,000 and 500,000 ducats.[61]

Military considerations should also be taken into account when discussing the role of Famagusta's port during the Venetian period. Venice kept a small military squadron of war galleys in Cyprus. Ascanio Savorgnan, who had been active on the island as a military engineer, noted in his report of 1562 that Famagusta's port could accommodate about 10 galleys.[62] But normally there were fewer galleys "of the guard" in this port. This squadron, which protected Venetian shipping around the island and in the eastern Mediterranean, needed a secure base for their activities, where they could find shelter, maintenance and supply services, as well as housing for their crews, especially during winter, when these galleys were often out of service.[63] At any rate, it should be emphasized that Savorgnan's re-

60. See, for example, B. Arbel, *Trading Nations. Jews and Venetians in the Early Modern Eastern Mediterranean*, Leiden: Brill, 1995, pp. 35-41, 45-49.

61. B. Arbel, "Venetian Cyprus and the Muslin Levant", in N. Coureas and J. Riley Smith (eds), *Cyprus and the Crusades*, Nicosia: Cyprus Research Centre, 1995, p. 170.

62. Savorgnan, "Copiosa descrizione", *op. cit*., p. 38.

63. B. Arbel, "Η Κύπρος υπό Ενετική Κυριαρχία", in T. Papadopoullos (ed.), *Ιστορία της Κύπρου*, vol. 4, part I, Nicosia: Makarios III Foundation, 1995, p. 479.

port focused on military aspects, which is why he only mentioned the military galleys. Extrapolating from this report that only military galleys could enter the inner port would therefore be a rash conclusion.

To complete this survey of the port's facilities, mention should be made of the arsenal, or shipyard, situated within the compound of the town fortifications. A water gate connected it with the inner harbour, but apparently only dismasted war galleys and small craft could pass under it.[64] The arsenal of Famagusta does not seem to have occupied an important role during the Venetian period, compared, for example with Candia's arsenal.[65] This is inferred from the meagre documentary evidence relatively related to this institution as well as from the contents of some of these sources, not all of them mentioning the term arsenal explicitly. For example, in December 1502 the governors of Cyprus wrote to Venice that the ship Contarina, which was badly in need of repair, would have to sail to Candia or Venice for this purpose, since the port of Famagusta was unable to provide *carena* services (reconditioning of the ship's hull from the outside, involving the

64. Jeffery, *A Description*, *op. cit*., p. 116; L.A. Maggiorotti, *Gli architetti militari*, vol. I Rome: La Libreria dello Stato, 1933 (L'opera del genio italiano all'estero), pp. 449-450; Faucherre, "L'enceinte urbaine", *op. cit*., p. 319 and figure 9.

65. According to Jean Richard, under the Lusignan kings, the activity of Famagusta's arsenal must have been normally limited to the maintenance and repairs of ships, and only exceptionally included shipbuilding. See J. Richard, « Les comptes de l'évêque Géraud de Paphos et les constructions navales en Chypre », in his *Chypre sous les Lusignans. Documents chypriotes des Archives du Vatican (XIVe et XVe siècles)*, Paris : Librarie orientaliste Paul Geuthner, 1962, pp. 33-49, esp. pp. 40-41. Yet for the early Genoese period we have a testimony by Nicolas de Martoni, who observed in 1395 that the local *tarzenale* was "large and beautiful, like that of Naples", see Legrand, « Relation du pèlerinage à Jérusalem », p. 631, also cited in Enlart, *L'art gothique*, *op. cit*., II, p. 622. For arsenals in Crete and other territories of the *Stato da Mar*, see G. Gerola, *Monumenti veneti nell'isola di Creta*, vol. IV, parte VI: *Opere idrauliche*, Venice: R. Istituto veneto di Scienze, Lettere ed Arti, 1932, pp. 123-148; E. Concina (ed..), "Sostener in vigore le cose del mare': arsenali, vascelli cannoni", in *Venezia e la difesa del Levante. Da Lepanto a Candia (1570-1670)*, Venice: Arsenale Editrice, 1986, pp. 50-53; M. Ferrari Bravo and S. Tosato (eds), *Gli arsenali oltremarini della Serenissima: approvvigionamenti e strutture cantieristiche per la flotta veneziana (secoli XVI-XVII)*, Milan: Biblion, 2010.

hauling of the vessel or leaning it sideward).[66] This difficulty may have resulted from the dimensions of this *nave*, since in the following year it was reported that two light galleys stationed in the port of Famagusta were hauled to dry docks (*soto li volti*) where they were subject to thorough reconditioning (*poner a charena*).[67] The arsenal is explicitly mentioned in a report of Pietro Lion, governor of Famagusta, in his dispatch sent to Venice at the end of November 1509, in which he mentioned two galleys that were kept there.[68] Several Ottoman galleys were repaired in the town's port in 1521, but the report does not explicitly mention the arsenal in this regard.[69] In 1536, the arsenal of Famagusta was required to provide timber to a certain artilleryman who was supposed to prepare saltpetre in this town.[70] The arsenal is also clearly depicted in Gibellino's view of the city, with the vaults of the dry docks inside the city walls near the homonymous tower.[71] Yet a report presented in 1561 by the outgoing governor of Famagusta, Domenico Trevisan, indicates that it had meanwhile changed its character, being transformed into a centre of production of rusks (*biscotti*) for the Venetian navy.[72] Nevertheless it can be surmised that some sort of basic maintenance services for ships could not be spared in an active harbour such as Famagusta, especially in view of the continual presence of war galleys in this port.

It should be emphasized that keeping a well-protected harbour that could be used by ships of all sorts was not only a Venetian interest, but had great advantages for the local population as well. In an area and period in which piracy was flowering in many parts of the Mediterranean sea, for a big

66. Sanuto, *I diarii*, IV, ed. N. Barozzi, Venice, 1880, col. 719.

67. Sanuto, *I diarii*, V, ed. F. Stefani, Venice, 1881, col. 965.

68. Sanuto, *I diarii*, X, eds G. Berchet *et alii*, Venice, 1883, col. 110.

69. Sanuto, *I diarii*, XXX, eds G. Berchet *et alii*,Venice, 1891, col. 111.

70. A. Ch. Aristidou (ed.), *Ανέκδοτα έγγραφα της Κυπριακής ιστορίας από το Κρατικό Αρχείο της Βενετίας*, vol. IV, Nicosia: Cyprus Research Centre, 2003, p. 237.

71. Otten-Froux, "La ville de Famagouste", *op. cit*., p. 113 (detail).

72. ASV, Collegio, Relazioni, busta 84, *relazione* Domenico Trevisan, f. 8 ("*nel loco dov'era l'arsenal*").

island such as Cyprus, which depended on maritime shipping in many spheres of its daily life, including food supply, provision of raw materials, fishing, communication etc., keeping the port of Famagusta in good operational conditions was a vital necessity. The importance of security for shipping was stressed in 1548 by the Venetian governor of Famagusta, Andrea Dandolo, who wrote in his report that an innumerable quantity of vessels was using the harbour because it was the only secure port on the island.[73]

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To enable the use of the port by both military and commercial galleys, as well as by privately-owned round ships, the problem of the silting of the harbour had to be confronted, and for that purpose, the depth of the water in Famagusta's port had to be monitored. As a matter fact, sounding the depth of the water seems to have constituted a routine operation carried out by every ship that entered the port of Famagusta. In his *Grand insulaire et pilotage*, a work that has not yet been entirely published, the French cosmographer André Thevet (1516-1590) provides evidence for this custom, as follows:

> At the entrance to the ports of Famagusta, when the sea water is high, the depth of the water reaches 9 feet, and during ebbs, only 6, whereas inside the port 20 [feet]. Near the tower of the chain, one has to direct the bow (*donner les provis*) and throw the lead line and subsequently the anchor beside the mole.[74]

Leonardo Donà, who visited the port during his stay in Cyprus with his father, the *Luogotenente* Giovanni Battista Donà (1557-58), noted that the depth of the water at the entry to the inner port was 12 *piedi* (4.17 m.) on the average (*poco più o meno, secondo la grossezza del mare*), and inside the port—16

73. ASV, Collegio, Relazioni, busta 61-II, *relazione* Andrea Duodo, f. 67.

74. My translation of a section of the *Grand insulaire et pilotage* published by Ch. Schefer as an appendix to : Denis Possot, *Le voyage de la Terre Sainte*, ed. C. Schefer, Paris: E. Leroux, 1890 p. 300 (*A la bouche du port de Famagoste, quand les eaux sont pleines, y a neuf pieds d'eaux, et avec la mer basse, il y n'y a que six, et dans le port y en a vingt ; auprès de la tour de la chaine faut donner les provis et jetter le plomb et puis l'ancre à l'endroit du molle*). Since there were no standard measures in the sixteenth century, it is not clear what sort of *pieds* are meant here.

piedi (5.56 m.). He also noted that the inner port could safely accommodate ships of any size (*dove sicuramente stanno le navi di ogni grandezza*), but later qualified it by stating that it could accommodate the merchant galleys and small round ships (*vi entrano le gallere grosse et navi picciole*).[75] Some years later, Paulo di Ferrari, the engineer in the service of the Republic, provided somewhat different measurements, which are also noted in his drawing (Fig. I). According to him, the water depth in various parts of the inner port of Famagusta was as follows: 13 *piedi* (4.52 m.) along the mole, 14 *piedi* (4.86 m.) at the entry to the inner port, and 12 *piedi* (4.17 m.) in the north-eastern section of the inner port.[76] Leaving aside Thevet's testimony, which presents problems concerning its origin and the kind of units referred-to, and considering that the testimonies of Donà and Di Ferrari roughly belong to the same years, the divergence between the data provided by these two gentlemen may result from a different way of measuring, or more plausibly from the difference between a non-professional evaluation and an actual measurement by an experienced engineer: Donà must have recorded information gathered from someone else, whereas Di Ferrari seems to have carried out the sounding himself in the service of the Venetian authorities. But both testimonies are significant, since they reflect a situation resulting from decades of repeated and continuous efforts to keep the port operative, as will be seen presently. As a matter of fact, the soundings provided by both Donà and Di Ferrari seem even more favourable for shipping compared with the water depth at the San Nicolò entrance (*porto di San Nicolò*) to the Venetian lagoon during the first half of the sixteenth century, which, according to Cristoforo Sabbadino's report of 1559, was less than 10 *piedi* (3.47 m.).[77]

75. BCMC, Ms. Donà dalle Rose 45, f. 161v.

76. *Frigerio, «Un plan manuscrit», op. cit*., pp. 297-298, and supra, Fig. I. Since one Venetian *piede*, or *pie*, is equivalent to 0.3477 metres (*Martini, Manuale di metrologia*, p. 817), the equivalent given by Balard ("Il Sistema portuale", *op. cit*., p. 339) should therefore be corrected. For the dating of Paolo di Ferrari's plan, see *supra*, note 25. An anonymous document, presumably written by a military engineer in 1558 in the course of deliberations concerning the fortification of the port or the construction of an alternative one, states that the water depth in the inner harbour (without further specification) was 11 piedi (3.82 m), see ASV, Miscellanea Gregolin, busta 39, ''Carte relative alla rinnovazione del porto di Famagosta'', third unnumbered folio.

77. C. Sabbadino, "Porto di Venezia", in *Scritture sopra la laguna di Alvise Cornaro e di Cristoforo Sabbadino*, ed. R. Cessi, Venice: Premiate Officine Grafiche C. Ferrari, 1941, p. 169.

A rare document, dated to the mid-sixteenth century, enables us to confront the above-mentioned measurements with the draught of Venetian ships of the same period. The draught of a fully-manned Venetian light galley (*galia armada*) is reported to have been between 4 and 5 *pie* (1.4 to 1.73 metres), that of a loaded merchant galley (*galea grossa carga*), including two cannons—10 *pie* (3.47 metres), and of a fully-loaded round ship (*nave carga*) with a deadweight of 500 *botte* – 11 *pie* (3.82 metres).[78] In other words, assuming that Paolo di Ferrari's measurements faithfully represent the real situation between the mid-1550s and the early 1560s, such vessels would be able to enter Famagusta's inner port. Even bigger ships could be brought into the inner harbour be using a special method described by Leonardo Donà with respect to the ship *Pianella*, which had a deadweight of 1000 *botte* and had to be brought into the inner harbour for repairs.[79]

The earliest explicit reference that I have been able to find concerning port dredging in Famagusta is an enactment of the Venetian Senate, taken on 19 August 1489, shortly after the formal annexation of Cyprus to Venice's overseas empire. The Senate approved the decision of the commander-in-chief of the Venetian fleet (*Capitaneo general da mar*), taken during his stay in Cyprus, to allot a number of fiscal revenues of the local treasury to the dredging of the port of Famagusta (*ad effosionem portus*).[80] Establishing special imposts to cover works of this kind or earmarking existing imposts for this purpose was a current custom in Venice,[81] and, as we see here, was implemented in the newly acquired territory without much delay.

78. U. Tucci, "Architettura navale veneziana. Misura di vascelli della metà del Cinquecento", *Bollettino del atlante linguistico Mediterraneo*, 5-6 (1964-65), p. 282.

79. See the Appendix. Donà noted that the draught of the *Pianella* was 11 piedi (3.82 m.), which must have referred to the unloaded vessel.

80. ASV, Senato Mar, reg. XII, f. 183v.

81. E.g. In mid-fourteenth century Candia, Venice imposed a special tax to cover the expenses of dredging the port of Candia, a decision that is believed to have been the immediate reason for the rebellion of Venetian settlers in Crete that broke out in 1363--see S. McKee, *Uncommon Dominion. Venetian Crete and the Myth of Ethnic Purity*, Philadelphia: University of Pennsylvania Press, 2000, p. 133. For the allotment of the revenues of imposts on the importation of textiles for the dredging of canals and the maintenance of quays and cisterns in Venice, see ASV, Senato Terra, reg. 11, ff. 35v-36v (November 1490), 58v (April 1491).

Later references, however, indicate that it was not always easy to put into effect decisions of this kind. In a letter sent to Venice on 2 August 1498, Bortolomeo Minio, the governor of Famagusta, reported that the dredging of the port (*cavar quel porto*) had already begun that year, so as to enable all four galleys of Beirut to enter it and anchor along the quay (*metter scala in terra*). Yet since he only received 50 ducats from the colony's treasury in Nicosia, he was constrained to interrupt these works.[82] Piero Sanuto, who was active in Cyprus as a *sindico del Levante* (a sort of colonial controller), mentioned in September 1500 the dredging of the port among the works that had to be carried out in Famagusta's port,[83] which probably indicates that dredging had not been carried out that year. On the other hand, the town's governor, Nicolò Pesaro, reported in December 1503 that dredging had been carried out that year as long as possible, and consequently the port was in good condition again (*reduto in bon termine*).[84]

Malfunctioning of the colony's financial administration occasionally caused discontinuities of the yearly dredging activities. A decision taken in June 1505 by the Venetian Council of Ten sheds light on this problem, but also reflects the resolution of this powerful organ to assure that funding for the dredging operations should not be lacking. We learn from this act that some Venetian patricians, who served in Nicosia as treasurers, used the money allotted to the port dredging for private commercial activities. The Ten had also learned that a considerable sum of money earmarked for dredging had accumulated in the central treasury in Nicosia, and it continued to grow from day to day. Therefore, to prevent any illegal use of this money and assure that it served exclusively the declared purpose of dredging the port of Famagusta, the Ten ordered to keep this fund in a separate strongbox (*in una cassa di bona securtà*), which had to be locked with three different keys that had to be kept by the chief governor (*Luogotenente*) of Cyprus, by one of his counsellors and by one of the treasurers.[85]

Following this decision we have only very few references to the dredg-

82. Sanuto, *I diarii*, II, *op. cit*., col. 19.

83. Sanuto, *I diarii*, III, *op. cit*., col. 839.

84. Sanuto, *I diarii*, V, *op. cit*., col. 965.

85. Aristidou, *Ανέκδοτα έγγραφα,* vol. I ,1990, *op. cit*., pp. 351-352.

ing activities in Famagusta until 1553. It may well have been that the above-mentioned intervention of the Council of Ten was successful, since the few reports from the intermediate years seem to refer to the dredging of the port and its cost as part of the regular expenditure of the Cypriot treasury. This is how it appears in the report of the *Luogotenente* Francesco Bragadin, presented in 1531, where the dredging of the port is listed among other maintenance and building activities carried out in Famagusta since 1490.[86] Later evidence, such as the copies of the annual budgets of the colony of the years 1556 and 1559 (the only detailed ones at our disposal), also indicates that payments for port dredging (*cavation dil porto*) and for the salary of a technician (*proto*) responsible for these works appear among other regular expenses of the Cypriot exchequer.[87] These documents seem to indicate that dredging was carried out annually without hindrance. Yet, at the same time it is not surprising to find out that, at least at some point, the old problems of getting the money needed for this activity from the central treasury in Nicosia re-surfaced from time to time.

This is how the issue of dredging the port of Famagusta is described in the report, presented in 1553 by Famagusta's outgoing *Capitanio*, Francesco Grimani, after his return to Venice:

> Another important matter concerns the dredging (*cavation*) of that port of Famagusta. There is an appropriate rule to allot yearly a certain amount of money to this purpose, but many times the money, which must be sent from Nicosia, arrives late, which causes the dredging works to be delayed by three months and sometimes longer, beyond the best season for carrying them out. I would suggest to enable the governor of Famagusta to earmark a sum of money corresponding to what is needed for six months of [dredging], evaluated at a monthly rate of about 15 to 20 ducats, from the revenues of Famagusta's customs duties, with appropriate attestations. Thus, dredging would be carried out during the

86. ASV, Collegio, Relazioni, busta 61-I, *relazione* Francesco Bragadin, f. 123.

87. BCMC, Ms. Cicogna 3596/30, f. 5 (1556), where an inclusive sum of 57,299/12 *bezant*s (about 7,000 ducats) is allotted to works on the fortifications of Famagusta, to munitions, to the production of rusks and the dredging of the port; BNM, Ms. It. VI 80 (5767), f. 182v (1559), where the annual salary of the *proto* amounts to 720 *bezant*s (about 90 ducats).

> proper season, which is more than necessary for the conservation of this port — the ornament and security of that city.[88]

The costs of the dredging works (15-20 ducats per month) mentioned in Grimani's report seem relatively modest, but they are confirmed by a report of another governor, Nadal Gabriel, presented in 1565, where they are said to amount to a yearly sum of 200 ducats.[89]

From Grimani's report we also learn that dredging was considered effective if carried out in a particular season, a point that is likewise stressed in the report sent in 1560 by the *Capitano* Domenico Trevisan, together with the *Provveditore*, or general commander of the military forces on the island, Andrea Duodo. They wrote that the dredging of the port had begun that year as soon as it became possible, that is in the month of March, and that it was intended to continue on a daily basis (*di giorno in giorno*) up to mid-October, with the help of a special mechanical device (*ingegno*) used for this purpose.[90] Apparently, dredging was not performed during the winter months, for reasons that will be elucidated presently.

The evidence presented so far raises a number of questions. Was the dredging of Famagusta's port a novelty introduced by Venice in this harbour?[91] In what way was the dredging operation carried out and what sort of special mechanism was used for this purpose? Who were the people employed in these works? How effective were these works? Were the dredging activities also carried out in other Cypriot ports, such as Paphos or Kyrenia? For the time being, some of these question will have to remain unanswered, at least until further evidence is discovered. However, the reports of other Venetian governors, as well as documents related to similar works carried out in the Venetian lagoon and Venetian Crete, can help us clarify a few aspects of this activity.

88. ASV, Collegio Relazioni, busta 84, *relazione* Francesco Grimani, f. 2v (my translation).

89. ASV, Collegio Relazioni, busta 84, *relazione* Nicolo Gabriel, ff. 2v-3.

90. ASV, Senato, Dispacci, Cipro, filza 5, 25 August 1560.

91. The claim that no such works were carried out by the Genoese during their rule of Famagusta (1374-1464) is worthy of further investigation, not least because the same opinion has been expressed with regard to the Venetian period, see Gertwagen, "Maritime Activities", *op. cit*., pp. 525, 527.

In 1556, three years after Francesco Grimani's report and recommendations, one of Grimani's successors reported from Famagusta that much timber and ironware were needed in Famagusta for several purposes, one of which was for repairs of the device (*ingegno*) used for dredging Famagusta's port.[92] We have already referred above to the use of such instruments in different other ports of Venice's *Stato da Mar*. I know of no verbal description of such mechanical instruments, and can only guess that it must have been similar to those denominated *edificio cavafanghi* ("mud-dredging instrument"), which have been used for centuries in the Venetian lagoon. As can be seen in a design of a similar device, presumably dated to 1622, they consisted of a boat or raft with clamshell buckets or a similar system enabling the extraction of sediments, debris and other materials from the sea floor and their removal from the port by boats or barges (See Figure III).[93]

A highly illuminating information related to this activity, particularly to the causes of the silting of Famagusta's harbour and to measures taken against it can be gleaned from the detailed report of another Venetian governor of Famagusta, Domenico Trevisan, presented in Venice in 1561. His seems to be the most pessimistic of all reports related to this problem. Trevisan wrote that although the port was beautiful and spacious, a great part of it was subject to silting. The reasons, according to him, were twofold: on the one hand, the penetration of sand into the port from the open sea through two or three openings in the natural breakwater (consisting of the line of reefs and islets); and on the other, the flowing of litter through the town's streets

92. ASV, Senato Mar, filza 16 (1556).

93. ASV, Savi ed esecutori alle acque, Disegni, Atti, busta 122, dis. 6 ("Macchina cavafanghi"). This is the earliest design that I could find of such a device. It accompanied a request for a patent that was denied by the Venetian authorities. See R. Berveglieri, *Le vie di Venezia. Canali, laguni e rii a Venezia: Inventori, brevetti, tecnologia e legislazione nei secoli XIII-XVIII*, Sommacampagna: Cierre Edizioni, 1999, pp. 164, 322. For an early twentieth-century version of such a mechanical device, see the illustration in Giampietro Zucchetta, *I rii di Venezia, La storia degli ultimi tre secoli*, Venice: Edizioni Helvetia/Foligraf, 1985, p. 168.

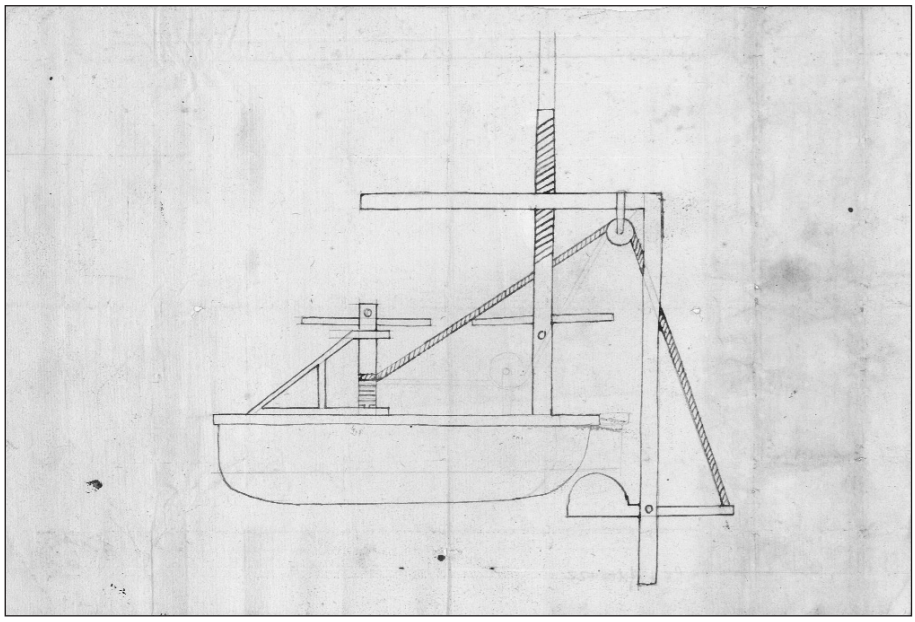

Fig. III: Proposal for a new model of a dredging machine (*Macchina cavafanghi*, 1622)[94]

into the port. The latter phenomenon (which had also been mentioned in documents concerning the silting in the port of Candia)[95] is presented in this report as the main cause of the trouble. Trevisan claimed that although dredging was carried out yearly for six months, the amount of sand and waste carried from the town streets into the port during a single winter was twice as much as could be removed during one dredging season. Since Famagusta's streets and alleys were unpaved, all he could do was to try keep-

94. ASV, Savi ed esecutori alle acque, busta 122, dis. 6. Photograph carried out by the Sezione di fotoriproduzione dell'Archivio di Stato di Venezia, by authorization of the Ministero per i Beni e le Attività Culturali No. 7/2015.

95. R. Gertwagen, "The Venetian Port of Candia, Crete (1299-1363): Construction and Maintenance", *Mediterranean Historical Review*, III/1 (1988) (special issue on *Mediterranean Cities: Historical Perspectives*, eds I. Malkin and R.L. Hohlfelder), p. 148; *idem*, "L'isola di Candia", *op. cit*., pp. 356-357, 363-364.

ing them as tidy as possible and to prolong the dredging season as far as possible. He also mentioned a proposed solution to divert the dirty water originating from the town into a sluice in which the mud and waste would set down, enabling the cleansed water to be subsequently sent out through a slide gate into the harbour. Yet this project could not be carried out for lack of collaboration on the part of the colony's central administration in Nicosia.[96] One of Trevisan's successors as governors of Famagusta, the *Capitanio* Nadal Gabriel, similarly wrote in 1565 that the silting in the port mainly resulted from the town's litter carried by the rain into the port. He recommended to deviate the flow of the town's waste to an area outside the harbour, a project that would cost 300 ducats but would save much more money that was invested in dredging.[97]

The above-mentioned reports provide a clear explanation why dredging was only carried out during summer, or rather during the long season in which it hardly rains at all in this part of the Mediterranean basin. The main effort seems to have focused on undoing during the dry season what the combination of human refuse and rain created during winter, and also silt that ended up in the Port of the Chain after penetrating from the open sea into the outer port. These testimonies of the 1560s may also reflect an increase of the process of silting towards the end of Venetian period. If Governor Trevisan was right in considering the flow of the town's refuse into the inner port during the rainy season as the principal reason for this phenomenon, we may link the deterioration of silting to the rise in Famagusta's population and the consequent increase in the volume of refuse accumulated in the town's unpaved alleys,[98] probably coinciding with a few stormy winters.

96. ASV, Collegio, Relazioni, busta 84, *relazione* Domenico Trevisan, ff. 12-12v. Trevisan's efforts in keeping the cleanliness of Famagusta's public space is also expressed in a letter sent by him when he was still in Famagusta, see ASV, Senato, Dispacci, Cipro, filza 5, Domenico Trevisan, *Capetanio*, and Andrea Duodo, *Provveditore*, 25 August 1560. For a similar phenomenon in Corfu, see Pagratis, *Οι εκθέσεις*, *op. cit*., pp. 217 (1582), 333 (1590). In the latter port, silting also appears to have resulted from caulking galleys inside the *mandracchio*, *ibid*., pp. 264-265 (1586).

97. ASV, Collegio Relazioni, busta 84, *relazione* Nicolo Gabriel, ff. 2v-3r.

98. Arbel, "Cypriot Population", *op. cit*., pp. 198-201.

The outer port, which, as we have seen, was considered by contemporaries as an integral section of Famagusta's harbour, though less secure than the inner port, apparently did not necessitate dredging, probably thanks to the openings between the line of rocky islets that may have reduced the accumulation of sand in the outer port's basin.[99]

Alongside dredging, port facilities, such as moles, breakwaters, quays, the shipyard, storehouses, the customs house (*Comerchio*), and the chain employed to close the harbour, also necessitated works of maintenance.[100] Like in other Venetian ports, Famagusta also had its *Armiraglio*, whose responsibilities, as described by contemporary sources, included overseeing the movement of vessels into and out of the port, supervising the repairs of ships, being in charge of the deposit of munitions, of manning the local *fusta* for missions to other parts of the island, and particularly, overseeing the dredging of the port, preventing the emptying of ships' ballast into the harbour and obstructing it by fishing nets. He was also responsible for collecting the *anchorazo* impost, which was earmarked for covering the expenses of the dredging operations.[101]

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In light of the aforementioned evidence, it is quite clear that the allegation, raised by R. Gertwagen, that Venice totally neglected the port of Famagusta

99. Governor Trevisan expressed a different idea when stating in 1561 that sand that penetrated into the outer port through these openings ended up by silting the inner port, see ASV, Collegio Relazioni, busta 84, *relazione* Domenico Trevisan, f. 12.

100. E.g. the debates concerning a new chain for Famagusta's port, discussed in Venice's Senate in 1557, see ASV, Senato Mar, reg. 33, f. 194 (30 Dec. 1557).

101. For references to Famagusta's *Armiraglio* (the term appears in different forms and spellings), see Aristidou, Ανέκδοτα έγγραφα, vol. I, *op. cit*., p. 323 (1516); ASV, Senato Mar, reg. 20, f. 99v (1523); BNM, Ms. It. VI, 80 (5767), f. 182v (1559). For several descriptions of the *Armiraglio*'s responsibilities, see ASV, Consiglio dei Dieci, Comuni, filza 13, No 78 with 4 *allegati*. The deposition of the outgoing *Capetanio*, Marcantonio da Canal (*allegato* IV), is stricken through and replaced by a shorter one, however it contains the fullest description of the *Armiraglio*'s responsibilities. Renard Gluzman has kindly turned my attention to this document.

is simply baseless. Besides, the same author's generalization that only small craft were able to use it is rather inaccurate.[102] Such allegations are based on a careless use of a number of sources referring to the port of Famagusta, a problematic interpretation of the term "port" in medieval and early modern sources, and a tendency to disregard the outer port as an integral part of Famagusta's harbour.

Following are several examples of the problematic use made of several medieval and early modern testimonies. Thus, Nicolo di Martoni's late-fourteenth century reference to *navilia* that entered to inner port of Famagusta is quoted by Gertwagen as referring to "small vessels", adding (without any basis in Martoni's text) that these *navilia* "brought the passengers and the merchandise into the inner port, through the outer one".[103] Jacques Le Saige (who visited Famagusta in 1518), writes: "[*nous*] *encrasmes nostre nave audit port de Famagosse*", adding, with respect to the town's good defence system, that Famagusta is well protected by rocks that prevent [attacking vessels] to approach it. This phrase lead Gertwagen to note that "one can safely conclude that the large commercial vessels anchored in the open bay of Famagusta".[104] Ascagno Savorgan's report of

102. For these opinions see R. Gertwagen, "Maritime Activities Concerning the Ports and Harbours of Cyprus from the 12th to the late 16th Centuries", in N. Coureas and J. Riley-Smith (eds), *Cyprus and the Crusades*, Nicosia: Cyprus Research Centre, 1995, pp. 522-527, 533-535.

103. Gertwagen, "Maritime Activities", *op. cit*., p. 524. For Martoni's text see Legrand, «Relation du pèlerinage à Jérusalem», *op. cit*., p. 628 (*civitas ipsa Famagosta habet portum satis pulcrum, reparatum a quo libet vento; in quo portu ante portam civitatis est de ligno quidam pons longus per jactum lapidis, prope quem pontem veniunt navilia, et per ipsum pontem mercantia portantur ad navilia*).

104. Gertwagen, "Maritime Activities", *op. cit*., p. 524, where Le Saige's visit is erroneously dated to 1538. For the original text, see H.R.J. Duthilloeul, ed., *Voyage de Jacques Le Saige de Douai à Rome, Notre-Dame-de-Lorette, Venise, Jérusalem et autres saints lieux*, Douai : Adam d'Aubers, 1851, p. 135 (*…nous ancrasmes nostre nave audit port de Famagosse. Fusmes bien esbahis de veoir si forte ville. Car les naves ne peullent venir pres pour les roches, et aussi les murs sont terriblement espes, et sont machonnes les fosses du letz de la ville*). For a similar view, attributing to the

1562 focuses exclusively on military considerations, therefore his references to the ability of the inner port to accommodate about ten light galleys (*galee dieci in circa*, and not "only" ten galleys, as cited by Gertwagen), is not an appropriate evidence for an argument that excludes the use of the port by other types of vessels.[105] Fürer von Haimendorff, who visited Famagusta in 1566, wrote that the Port of the Chain was appropriate for the mooring of galleys [without specifying which sort of galleys], adding that the town also has a "sea port" (*einen Seehafen*), which is not as good as the smaller port, but does accommodate big ships, although the entry into it is rather dangerous. Gertwagen, uses the problematic English translation by Cobham, citing Haimendorff as if stating briefly that the harbour "…is well suited as an anchorage for light vessels".[106] Another source used through the faulty translation by Cobham is the letter written from Famagusta in 1563 by the Jewish traveller Elijah of Pesaro. Citing Cobham's translation, according to which "...The government always keeps here five empty galley to watch and guard the see", Gertwagen adds that "No doubt, when on duty, they loaded with artillery outside the port". Yet the original Hebrew letter does not mention "empty" galleys, but rather light galleys.[107] Finally,

reef a defensive role, completing that of the town's fortification, see the report of the *Capetanio* Andrea Dandolo: ASV, Collegio, Relazioni, busta 61-II, *relazione* Andrea Dandolo [1548], f. 68 (*El sito di Famagosta è fortissimo, perché da una parte ha il porto serrato di purpurela, che rende sicura quella parte de esser batuta da l'inimico. Da terra è posta la muraglia…*).

105. Gertwagen, "Maritime Activity", *op. cit*., p. 526. See Savorgnan, "Copiosa descrizione", *op. cit*., p. 38.

106. Gertwagen, "Maritime Activities", *op. cit*., p. 525. For Fürer's original text, see Fürer von Haimendorff, *Reis Beschreibung*, *op. cit*., pp. 298-299 (*Famagusta… hat einen zimlich guten Meerhafen daran, wiewol er eng, so ist er doch gut fuer Galeeren, wird fornem mit einer Ketten gesclossen; bei dem Castel an dem andern Ort hat es auch ienen Seehafen, aber nich so gut dann der kleiner; allda pfelgten die andere grosse Schiffe zu stehen…*").

107. Gertwagen, "Maritime Activities", *op. cit*., p. 526. For this phrase, see the original Hebrew letter in Bibliothèque nationale de France, Ms. Héb. 276, f. 119v. The Hebrew word was erroneously read as "empty" (*reyqim*) in nearly all printed editions

Gertwagen also cites the notoriously unreliable Etienne de Lusignan (Stefano Lusignano), using once again the equally unreliable translation by Cobham of a sentence that is very ambiguous and unclear, but rendered arbitrarily into a simple and clear sentence by stating that "the port is choked, because the Signory takes no care of it".[108]

A central argument in Gertwagen's articles dedicated to several ports in Venice's overseas empire is the idea that references made in the contemporary sources to ships that entered ports (*porti*) often refer to bays, or open anchorages, where ships were forced to anchor because of the silting of artificial ports.[109] Truly, there are instances in which an open anchorage was referred to as *porto*, as were also the entries into the Venetian lagoon (*porto di San Nicolò*, *porto di Malamocco*, *porto di Chioggia*). Yet it should be emphasized that fifteenth and sixteenth-century Italians knew very well and took care to distinguish between, on the one hand, an artificial or a semi-artificial port (as in the case of Famagusta) and on the other, an open anchorage, all the more so in places where real harbours, including all the relevant facilities, existed. Many examples could be cited, but we shall limit ourselves to evidence related to Venetian Cyprus. For example, Pietro Ca-

and translations. The proper Hebrew reading should be *daqim*, which is a faithful translation of the Italian term *sottili*.

108. Gertwagen, "Maritime Activities", *op. cit*., p. 526. For Lusignan's text see S. Lusignano, *Chorografia et beve historia universale dell'isola de Cipro* etc., Bologna: Alessandro Benaccio, 1573, pp. 49-50 (*…havea ancora un Arsenale al tempo di Re: hora è pieno; perché La Signoria non se ne cura, essendo il porto serrato con la catena*). The original punctuation and capitalization has been intentionally preserved in this citation.

109. R. Gertwagen, "The Venetian Port of Candia", *op. cit*., pp 141-158; *idem*, "L'isola di Creta e i suoi porti", *op. cit*., pp. 337-365; *idem*, "The Concept of Medieval Ports", *op. cit*., pp.177-241; *idem*, "Venetian Modon", *op. cit*., pp. 125-148; *idem*, "Maritime Activities", *op. cit*., pp. 511-538. With respect to Candia, David Jacoby has demonstrated that in most cases, such an interpretation is erroneous, and that vessels of various size did use that harbour quite regularly, see D. Jacoby, "The Operation of the Cretan Port of Candia in the Thirteenth and First Half of the Fourteenth Century: Sources, Speculations and Facts", *Thesaurismata*, 39-40 (2009-2010), pp. 9-23.

sola, who sailed from Venice to the Holy Land in 1494, noted in his travelogue that when the galley on which he sailed reached Limassol, it cast anchor "off the shore" (*sopra la spiagia*), "since there was no port in that place" (*per non esserli porto*); similarly, when sailing on the same galley back to Italy, he writes that on reaching Limassol, the galley was fastened with the anchors, "since there was no port there to which the cables could be attached, but only a beach" (*imperò che lì non gli è porto dove se possano gitare le provexe, solo lì è la spiagia*).[110] In their reports presented to the Collegio at the end of their term of office, Venetian governors who returned from Cyprus clearly distinguished between ports (Famagusta, Cerines and Paphos, described as *porti*) and anchorages (referred to as *sorzadori*), which could offer excellent conditions, but nevertheless, were not described as *porti*.[111] Likewise, Ascanio Savorgnan refers in his report of 1562 to each one of the harbours of Famagusta, Cerines and Paphos as *porto*, making it quite clear at the same time that Limassol and Le Saline, though described by him as excellent anchorages (*sorzadori*), did not have any port.[112] In short, certainly in the sources used for this study, ports are ports and open anchorages are open anchorages. This is how the aforementioned documentation presented in this article should be understood.

This being said, it should also be noted that ships could have different reasons for not entering harbours, such as saving the payment of the anchorage tax (which is still a factor today for ship to avoid entering ports),

110. G. Porro, (ed.), *Viaggio a Gerusalemme verso la fine del 1400 tratto dalla Biblioteca Trivulziana,* Milan: Paulo Ripamonti Carpano, 1855, pp. 48, 87-88.

111. E.g. Sanuto, *I diarii*, LI, *op. cit*., col 442 (report of the *Luogotenente* Sivestro Minio, 1529); ASV, Collegio Relazioni, busta 61-I, f. 123v (report of the *Luogotenente* Francesco Bragadin, 1531).

112. Savorgnan, "Copiosa descrizione", *op. cit*., pp. 37 (Cerines), 38 (Famagusta), 39 (Le Saline), 40 (Limassol), 41 (Paphos). Cerines, although secure thanks to a chain, was a small port, and hardly used by Venetian ships, whereas Paphos, described by the *Luogotenente* Bragadin as a "*porticello piccolo*", could only be used by small craft owing to rocks and shoals close to it. See ASV, Collegio Relazioni, busta 61-I, *relazione* Francesco Bragadin (1531), ff. 123, 126v.

or avoiding the technical difficulties, the risk and the waste of time involved in entering and exiting ports in the age of sail.

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The evidence presented here can serve as a warning against reaching rush conclusions on the basis of occasional testimonies referring to difficulties in using the inner port. The Venetian rule of Cyprus lasted nearly a century, and there were apparently periods in which the situation of the port made it difficult or even impossible to be used by certain types of ships, as attested by Pierre Mésenge in 1507 and in the governors' reports of the early 1560s. Yet in following the changing conditions of Famagusta's port we have also to take into consideration the long periods in which no complaints were raised in this regard, as well as the positive evidence for the use of the inner port by a variety of vessels. Above all, the continuous efforts and resources invested in dredging, by using special equipment as well as technical know-how that passed from Venice to its overseas colonies and from one Venetian colony to another, are most significant. Had these operations been ineffective, it would be inconceivable and much unlike the Republic's pragmatism to invest on a regular yearly basis so much efforts and resources for dredging the inner port of Famagusta.

Consequently, apart from a few difficult but limited periods, galleys of all sorts as well as rounds hips (*navi*) of medium size (up to about 600 *botte*), were able to use the Port of the Chain, and even bigger merchantmen could do so if absolutely necessary, after being unloaded, as indicated by Leonardo Donà with respect to the ship Pianella.[113] As already noted, there was apparently no need to dredge the outer section of the harbour, which normally served the bigger merchantmen.

Though not constituting the principal port of call of Venetian merchant ships during the Venetian period, the two sections Famagusta's harbour served a variety of vessels throughout this period. Not only the Venetian Republic and its merchants, but also Venice's Cypriot subjects undoubtedly

113. See the Appendix.

benefited from the efforts to keep Famagusta's port operative for a great variety of maritime activities. I know of no evidence of almost continuous and regular port dredging, as encountered in Famagusta, in other Venetian ports, where similar works seem to have taken place periodically, when needed, on a contractual basis. Anyhow, a more systematic and comprehensive research on the maintenance of other ports in the Republic's *Stato da Mar* would be necessary in order to find out whether and to what extent the port of Famagusta constituted an exceptional case.

APPENDIX: Leonardo Donà's description of the port of Famagusta

BCMC, Ms Donà dalle Rose 45, ff. 160v-162[114]

<160v> Il porto di Famagosta tutto, cioè quello di cadena e quello dove stano le navi sorte dentro delle secche sta' <161> così:

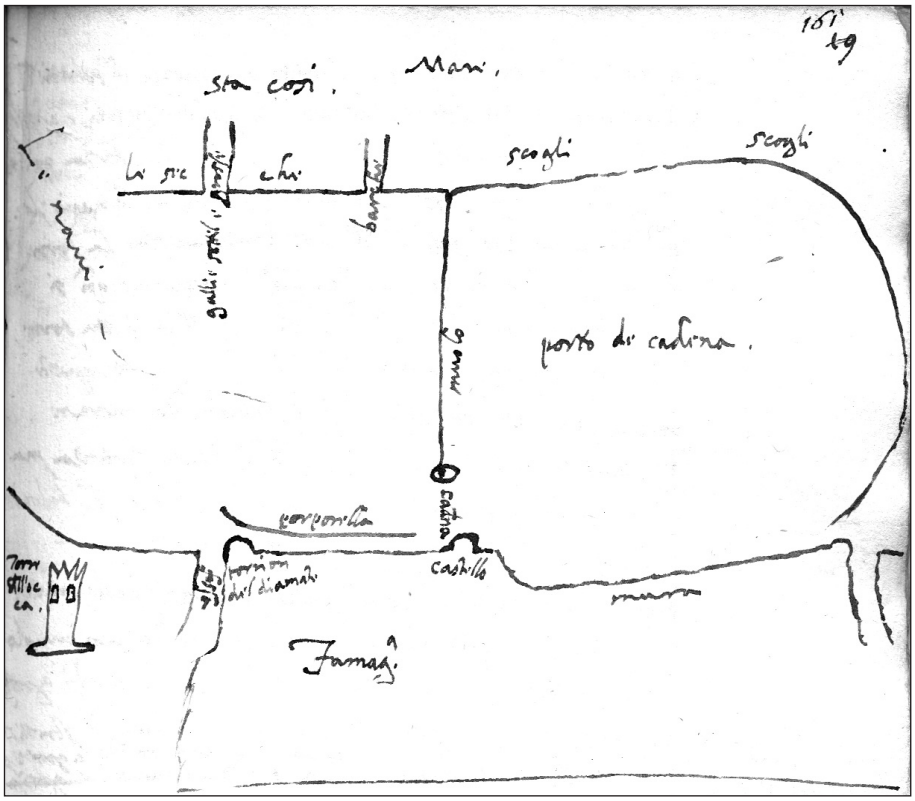

Fig. IV: Leonardo Donà's sketch of Famagusta's harbour (1557-8)[115]

114. I am most grateful to Dr. Piero Lucchi, Director of the Library of the Museo Correr in Venice, for kindly enabling me to check my old transcription of this manuscript.

115. By courtesy of the Biblioteca del Civico Museo Correr.

Famagosta adunque prima ha il porto, cioè, dentro delle secche, dove sicuramente stanno le navi di ogni grandezza guardate dal mare di Grego, Levante, Ostro etc., il quale rompe sulle dette secche, et dalla Tramontana dall'isola. E qui vi è fondo di cinque fin sei passa e buon tenidor.

Questo porto dentro delle secche ha, come appare nel dissegno, tre bocche da entrarvi: la prima appresso li scogli del porto di cadena, per la quale entrano solamente le barche e piccioli navilii; la seconda <161v> a mezzo le secche, la quale è diritto per mezzo il Torrion del Diamante, e per questa entrano le gallere sottili e grosse, et ha tre in quattro passa di aqua; la terza poi è la bocca maggiore, per la quale entrano le navi, le quali hano per segno del ben imboccarla la Torre dell'Occa, che è di sotto Famagosta, percioché quando si vede dalla nave tra le due fenestre della detta torre, all'hora conoscessi di venir bene. Tutte queste bocche sono alquanto difficili e pericolose da entrare. È guardato questo porto dalla fortezza, ma sarà molto più quando sarà fornita la fabrica del baloardo del Carmeni, che hozzidì si incomincia.

Ha poi il porto di cadena, il quale è serato dalle medesime continuanti secche et scogli, et da un muolo artificiosamente fatto dal sasso tagliato dagli scogli grossissimo. La bocca di questo porto dove è la cathena è strettissima, et ha 12 piedi d'aqua, pocco più o meno secondo la grossezza del mare. Non si può profondar più, perché si ritrova la rocca. Dentro poi nel porto vi è sin 16 piedi d'aqua. Vi entrano le gallee grosse et navi picciole. Ho per hora veduto et inteso che'l saria capace di 60/sessanta gallee, ma tuttavia si cava per farlo maggiore et conservarlo.

[Added on the left margin:] 1557 zener: Ma immediate fuori della bocca del porto vi è sorto scanni, sopra il quale non vi sono più di 11 piedi di aqua […],[116] et la nave Pianella di 1,000 botte, dovendo per acconciarsi intrar in porto, conviene mettersi in 11 piedi et con doi navilii dalle bande presentarsi alla bocca, tirandosi a giegomo, et poi dar due frasconi per potersi regger uno sulla torre, l'altro …. [sic, the marginal addition ends abruptly]

Fuori del porto della cadena, per quanto tien la muraglia sopra il mare,

116. An undecipherable word added over the line.

vi è stato fatto a mano una porporella 25 in 30 passa larga dalla detta muraglia, acciò che nessuna sorte di vassello se gli possa accostare, <162> et è un palmo sotto il pello d'aqua.

TRANSLATION[117]

<f. 160v, Caption> The entire port of Famagusta, i.e. the part inside the chain and the one where the [round] ships are anchored within the banks, <161> like this:

[See *supra*, Figure IV]

[Text] Famagusta, then, has first of all the port, that is the part within the banks, where ships of all sort and size can stay securely, protected from the sea from north-east, east, south etc., since the sea breaks against these banks, and also from the north, by the island itself. The water's depth in this part is between 5 and 6 *passa* [c. 6.7 to 10.4 m], and the sea bottom there is good for anchoring.

As can be seen in the sketch, the port within the banks has three entrances; the first, close to the rocks of the port of the chain, where only boats and small vessels can pass through; the second, <161v> at about half the banks' length in front of the Tower of the Diamond, through which light and big galleys can pass, since the water there is 3 *passa* deep [c. 5.2 m.]; the third entrance is the major one, through which the merchantmen can pass. To do so they can use the Tower of the Goose, which is situated outside Famagusta: to find the right direction for entering the port, one has to see both windows of that tower from the ship. All these entrances are somewhat difficult and dangerous to pass through. The port is guarded by the fortress, but it will be better protected once the bastion of the *Carmini*, on which works have already begun, is completed.

117. My translation. A somewhat inaccurate English translation of two sections of Donà's description of the port has been published in N. Patapiou, "Leonardo Donà, Memorie per le cose di Cipro: From the City of Shoal Waters to Outermost Karpasia", in J. Chrysostomides and C. Dendrinos (eds), *"Sweet Land…". Lectures on the History of Cyprus*, Camberley, Surrey: Porphyrogenitus, 2006, p. 220.

There is also the Port of the Chain, which is closed by the rest of the aforementioned banks and rocks, and by an artificial mole made of very big stones cut off the rocks. The opening of this port, where the chain is located, is very narrow, and the depth of the water there is more or less 12 *piedi* [c. 4.1 m], depending on the condition of the sea, but it cannot be deepened any further since the sea bottom there is rocky. Within the port the water's depth is 16 *piedi* [c. 5.5 m.]. The big galleys and small round ships enter this port. I have been told and seen that it could accommodate about 60 galleys, but it is still being dredged in order to enlarge and conserve it.

<marginal addition> January 1557. But sand banks have appeared just outside the port's entrance, where the […][118] water is not deeper than 11 *piedi* [3.82 m.]. And for enabling the ship Pianella, which has a capacity of 1,000 butts and therefore needs a draught of 11 *piedi* [3.82 m.], to enter the [inner] port for repairs, it would be necessary to bring it to a point where the water is 11 *piedi* deep, and with the help of two vessels on both its sides up to the entry [of the inner port] by the pulling of ropes (*a giegomo*), and then by maneuvering with two [other] ropes (*frasconi*), one tied to the tower and the other…<end of marginal note>[119]

Outside the Port of the Chain, where the city walls touch the sea, they built a mole at a distance of 25 to 30 *passa* from the said walls, to prevent whatever vessel to reach them. <162> It is a palm below the water surface.

118. An undecipherable word added over the line.

119. For the terms *a giegomo*, or *a gegomo* and *frasconi*, see S. Stratico, *Vocabolario di marina in tre lingue*, vol. I, Milan: Dalla Stamperia Reale, 1813, p. 212; S. Bellabarba, "The Square-Rigged Ship of the Fabrica di Galere Manuscript, Part II", *Mariner's Mirror*, 74/3 (1988), pp. 225-228. Mauro Bondioli has kindly turned my attention to these publications.